AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe;

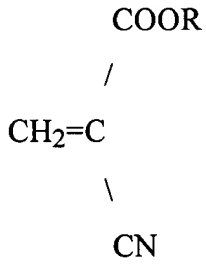
providing a cyanoacrylate adhesive material formulated to cure in less than about 60 seconds in a temperature of about 20°C to 30°C and an ambient atmosphere;

applying a volume of the adhesive material in viscous form to the leadframe or to the die;

pressing the die and the leadframe together to form an adhesive layer between the die and the leadframe; and

polymerizing from 90-100% of the adhesive material between the temperature of 20 °C to 30 °C and at the ambient atmosphere, without heating the die and the leadframe, without adding to a thermal budget of the die, and without introducing thermal stresses in the die, in less than about 60 seconds.

2. (previously presented) The method of claim 1 wherein the adhesive material has the formula:



wherein R comprises a hydrocarbon group.

3. (previously presented) The method of claim 1 further comprising applying a catalyst to the leadframe, to the die, or to the adhesive material prior to the polymerizing step.

4. (previously presented) The method of claim 1 wherein the volume is selected to form the adhesive layer with a selected thickness.

5. (previously presented) The method of claim 1 wherein the volume contains about 0.0025 to 0.0011 grams of the adhesive material.

6. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe;

providing a cyanoacrylate adhesive material formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and in an ambient atmosphere;

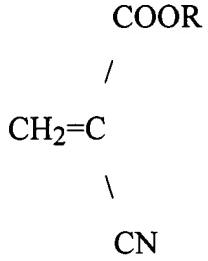
providing a system configured to apply a volume of the adhesive material to the leadframe or to the die and to place the die in contact with the leadframe with a pressure;

applying the volume of the adhesive material in viscous form to the leadframe or to the die using the system;

placing the die on the leadframe using the system with the adhesive material compressed between the die and the leadframe to form an adhesive layer therebetween, and the volume selected to form the adhesive layer with a selected thickness; and

polymerizing from 90% to 100% of the adhesive material between the temperature of 20°C to 30°C and in the ambient atmosphere, without heating the die and the leadframe, without adding to a thermal budget of the die, and without introducing thermal stresses in the die, in less than about 60 seconds.

7. (previously presented) The method of claim 6 wherein the adhesive material has the formula:



wherein R comprises a hydrocarbon group.

8. (previously presented) The method of claim 6 wherein the system comprises a die attach machine.

9. (previously presented) The method of claim 6 wherein the system includes a dispensing mechanism configured to form a plurality of dots of the adhesive material on the leadframe.

10. (previously presented) The method of claim 6 wherein the adhesive material includes an electrically conductive filler comprising a material selected from the group consisting of Ag, Ni and Fe.

11. (previously presented) The method of claim 6 wherein the volume contains about 0.0025 to 0.0011 grams of the adhesive material.

12. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe comprising a mounting paddle;

providing an adhesive material in viscous form comprising a cyanoacrylate adhesive formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and in an ambient atmosphere;

providing a die attach machine configured to align the die to the mounting paddle, to apply the adhesive material to the mounting paddle and to press the die and the mounting paddle together with the adhesive material therebetween;

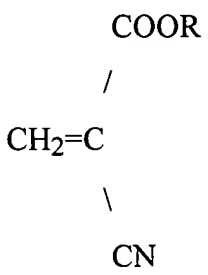
applying a volume of the adhesive material to the mounting paddle using the die attach machine;

pressing the die on the adhesive material with a pressure using the die attach machine; and

polymerizing from 90-100% of the adhesive material between the temperature of 20°C to 30°C and in the ambient atmosphere, without heating the die and the leadframe, ~~at the temperature and in the ambient atmosphere~~ without adding to a thermal budget of the die, and without introducing thermal stresses in the die, in less than about 60 seconds.

13. (previously presented) The method of claim 12 wherein following the polymerizing step the adhesive material comprises an adhesive layer having a selected thickness.

14. (previously presented) The method of claim 12 wherein the adhesive material has the formula:



wherein R comprises a hydrocarbon group.

15. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe;

providing a cyanoacrylate adhesive material formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and in an ambient atmosphere;

providing a system comprising a leadframe feed mechanism for manipulating the leadframe, a vacuum tool for manipulating the die, and a dispensing mechanism for applying the adhesive material;

applying a volume of the adhesive material in viscous form to the leadframe or to the die using the system;

placing the die on the leadframe with the adhesive material compressed between the die and the leadframe using the system; and

polymerizing from 90-100% of the adhesive material between the temperature of 20°C to 30°C and in the ambient atmosphere, without heating the die and the leadframe, without adding to a thermal budget of the die, and without introducing thermal stresses in the die, in less than about 60 seconds.

16. (previously presented) The method of claim 15 wherein the system comprises a die attacher.

17. (previously presented) The method of claim 16 wherein the adhesive material comprises a filler comprising a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni.

18. (previously presented) The method of claim 16 wherein the leadframe comprises a mounting paddle for supporting the die and the applying step comprises applying the adhesive material to the mounting paddle.

19. (previously presented) The method of claim 16 wherein the leadframe comprises a lead-on-chip leadframe comprising a plurality of lead fingers configured for wire bonding to the die and for supporting the die.

20. (previously presented) The method of claim 16 wherein the volume is selected to form an adhesive layer of a selected thickness.

21. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe;

providing an adhesive material comprising an anaerobic acrylic formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and in an ambient atmosphere;

applying a volume of the adhesive material in viscous form to the leadframe or to the die;

placing the die on the leadframe with the adhesive material compressed between the die and the leadframe to form an adhesive layer; and

polymerizing from 90% to 100% of the adhesive material between the temperature of 20°C to 30°C and in the ambient atmosphere, without heating the die and

the leadframe, without adding to a thermal budget of the die, and without introducing thermal stresses in the die, in less than about 60 seconds.

22. (previously presented) The method of claim 21 wherein the applying step and the placing step are performed using a system comprising a leadframe feed mechanism for manipulating the leadframe, a vacuum tool for manipulating the die, and a dispensing mechanism for applying the volume of the adhesive material.

Claims 23-39 (canceled)

40. (previously presented) The method of claim 21 further comprising applying a catalyst to the leadframe, to the die, or to the adhesive material prior to the polymerizing step.

41. (previously presented) The method of claim 21 wherein the leadframe comprises a lead-on-chip leadframe comprising a plurality of lead fingers configured for wire bonding to the die and for supporting the die.

42. (currently amended) A method for packaging a semiconductor die comprising:

providing a leadframe;

providing an adhesive material comprising a cyanoacrylate adhesive or an anaerobic acrylic formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and in an ambient atmosphere;

providing a filler in the adhesive material selected to tailor a characteristic of the adhesive material;

providing a die attach machine configured to align the die to the leadframe, to apply the adhesive material to the leadframe, and to press the die and the lead fingers together with the adhesive material therebetween with a pressure;

applying a volume of the adhesive material in viscous form to the lead fingers using the die attach machine;

pressing the die and the leadframe together with the adhesive material in contact with the die and the leadframe using the die attach machine; and

polymerizing from 90-100% of the adhesive material ~~without heating the die and the leadframe~~ at the temperature and in the ambient atmosphere, without heating the die and the leadframe, without introducing thermal stresses in the die, and without adding to a thermal budget of the die, in less than about 60 seconds.

43. (previously presented) The method of claim 42 wherein the filler comprises an electrically insulating material or an electrically conductive material.

44. (previously presented) The method of claim 42 wherein the volume is selected to form an adhesive layer with a selected thickness.